ORIGINAL ARTICLE

Prevelance of Undiagnosed Bronchiectasis in Patients Suffering from Severe Persistent Asthma

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ABSTRACT

Introduction: Asthma is a clinical condition associated with recurring airway obstruction, airway hyperresponsiveness and airway inflammation. Asthma and bronchiectasis are separate illnesses. However, both disorders occur in some patients e.g., ABPA. Rare data exist for determining the impact of asthma aggravation by bronchiectasis. Present study aims to find such association.

Objective: To determine the prevalence of undiagnosed bronchiectasis in patients suffering from severe persistent asthma.

Study Design: Cross sectional/descriptive study

Place and Duration of Study: Department of Pulmonology, Al-Aleem Medical College/Gulab Devi Teaching Hospital Lahore from 1st July 2020 to 31st December 2020.

Methodology: One hundred and twenty five patients of severe persistent asthma were enrolled. Patients were aged between 20-75 years. Patients details demographics age, sex and body mass index were recorded after taking written consent. High-resolution computed tomography (HRCT) chest was done among complete patients to recognized undiagnosed bronchiectasis. Prevalence of undiagnosed bronchiectasis was assessed among cases.

Results: Sixty five (54.17%) were females and the rest were males 55 (45.83%). Mean age of the patients were 40.26 ± 9.55 years with mean BMI 25.16 ± 8.66 kg/m^2. 35 (28%) patients had smoking history. Majority of the patients 55 (44%) were aged between 45-75 years of age. Prevalence of undiagnosed bronchiectasis was found in 48 (38.4%) patients of severe persistent asthma.

Conclusion: The prevalence of undiagnosed bronchiectasis was significantly high among patients of long disease duration suffering from persistent asthma.

Keywords: Severe persistent, Asthma, Undiagnosed bronchiectasis

INTRODUCTION

Asthma is a clinical condition associated with recurring airway obstruction, airway hyperresponsiveness and airway inflammation. Asthma is thus a syndrome. Exacerbation of asthma is demonstrated through periods of increasing shortness of breath, coughing, tightening of chest or a combination of such symptoms. Asthma exacerbations involve a range of risk factors, such allergens, viral infections, pollution, medicines, obesity, emotional stress, rhinitis, sinusitis, and GERD.[1]

Bronchiectasis is characterized by persistently dilating airways because of the inadequate clearance of different microorganisms and of recurrent or chronic infections of the bronchial inflammatory system.[2]

While in most places, the real prevalence is not known, bronchiectasis in North America and around the globe is currently being diagnosed more frequently.[3] The bronchiectasis diagnosis is based on the examination of clinical history and characteristic patterns on HRCT.

Asthma and bronchiectasis are separate illnesses. However, both disorders occur in some patients e.g. ABPA. Rare data exist for determining the impact of asthma aggravation by bronchiectasis. We have only one report to our knowledge about the impact of asthma coexisting

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bronchiectasis.[4] Many clinical asthma studies nonetheless omit patients with bronchiectasis. The disorders include airflow obstruction and respiratory symptoms, which imitate asthma. COPD and bronchial fibrosis, constrictive bronchiolitis and congestive cardiac failure are among them. Scanning with HRCT is important for the diagnostics of serious asthma patients.

In asthmatic patients, the rate of bronchiectasis ranges from 9% to 77% with a median of 31%.[5-7] The large range in the incidence of bronchiectasis observed is largely related to patient population variances and scanning procedures. In a research by Gupta et al[8] studying HRCT chest scanning in individuals with severe asthma, 40 percent of these patients had bronchiectasis. In another study, 26 patients with asthma reported prevalence of bronchiectasis (24.8%).[9]

MATERIAL AND METHODS

This descriptive/cross-sectional study was conducted at Department of Pulmonology, Al-Aleem Medical College/Gulab Devi Teaching Hospital Lahore from 1st July 2020 to 31st December 2020 and consisted of 125 patients of severe persistent asthma. Patient's details demographics were recorded after taking informed written consent. Patients who had cardiac disease, liver cirrhosis and those did not give any written consent were excluded from this study. Patients were aged between 20-75 years.

Patients details demographics age, sex and body mass index were recorded after taking written consent. High-resolution computed tomography chest was done to diagnose bronchiectasis. Prevalence of undiagnosed bronchiectasis was then assessed among cases. Complete data was analyzed by SPSS 22.

RESULTS

There were 65 (54.17%) females, and the rest were males 55 (45.83%). Mean age of the patients were 40.26±9.55 years with mean BMI 25.16±8.66 kg/m^2. Thirty-five (28%) patients had smoking history. Majority of the patients 55 (44%) were aged between 45-75 years of age (Table 1). Prevalence of undiagnosed bronchiectasis was found in 48 (38.4%) among patients of severe persistent asthma (Table 2). Among 48 cases of undiagnosed bronchiectasis, majority of the patients 28 (58.33%) were males as compared to females 20 (41.67%) [Table 3].

Table 1: Baseline details demographics of enrolled cases

Variables	No.	%
Mean age (years)	40.26±9.55	
Mean BMI (Kg/m^2)	25.16±8.66	
Gender		
Male	55	45.83
Female	65	54.17
Smoking History		
Yes	35	28.0
No	90	72.0
Age difference (years)		
20-35	33	26.4
35-45	37	29.6
> 45	55	44.0

Table 2: Frequency of undiagnosed bronchiectasis among cases (n=125)

Undiagnosed bronchiectasis	No.	%
Yes	48	38.4
No	77	61.6

Table 3: Association of undiagnosed bronchiectasis with respect to gender (n=48)

Gender	No.	%
Male	28	58.33
Female	20	41.67

DISCUSSION

In individuals with severe asthma, bronchiectasis is usually missed even when typical symptoms are presented that are suitable for diagnosis. Thus, related disorders as the cause of respiratory symptoms and uncontrolled asthma need to be examined in individuals with severe asthma. High-resolution computed tomography scanning is part of asthma management, though it differs between centers. In diagnosis and treatment plan of severe asthma patients, HRCT scanning plays a major role to rule out associated diseases.

Majority of the patients were females 54.17%. Mean age of the patients were 40.26±9.55 years with mean BMI 25.16±8.66 kg/m^2. 35 (28%) patients had smoking history among 125 cases. Majority of the patients 55 (40%) were aged between 45-75 years of age. Our findings are comparable to the previous some studies.[8,10,11] Among 48 cases of undiagnosed bronchiectasis, majority of the patients 28 (58.33%) were males as compared to females 20 (41.67%). According to literature, bronchial prevalence ranges between 2.2%[12] and 77%[13] among people with asthma. Neeld et al[14] has shown a high incidence of asthma bronchiectasis and has identified cylindrical bronchiectasis in asthma patients without allergic bronchopulmonary aspergillosis after the HRCT has been shown to be effective for allergic bronchopulmonary aspergillosis diagnostic.

The current qualitative, cross-sections analysis demonstrated that 48 (38.4%) out of 125 individuals with severe persistent asthma had bronchiectasis with HRCT. This was shown by an HRCT scan in the detection of undetected bronchiectasis in serious, persistent asthma patients. Most people in this study had a history of asthma of 73.6% >35 years and the average life of the disease was 28.8±7.14 years. The mean duration of the disease was 25.7 years in Gupta et al study.[8] Although bronchiectasis and asthma are in many aspects different, asthma is hard to control if the patient has both illnesses simultaneously. Most bronchiectasis asthma patients have severe asthma.[15]

Nevertheless, a recent study[16] employed noninvasive inflammatory measurements in 40 bronchial asthma patients, generated sputum and FeNO. These authors showed that in bronchial asthma, there is eosinophil or mixed (neutrophilia & eosinophilia) inflammation patients had higher levels of FeNO and better reversibility to bronchodilation as was the case with asthma[17], compared to patients with neutrophilic inflammation or pauci-granulocytic phenotype, they found that eosinophile inflammation was not mainly caused by their findings in other inflammatory parameters (IL-13, even in individuals who suffer from eosinophile inflammation, increased somewhat in bronchiectasis).

Persistent bacterial bronchiectasis of airways caused by poor ciliary transport, initiates an inflammatory cycle defined by neutrophils and neutrophil-proteases activated. Airways are also subject to persistent colonisation.[15] The strength of this study is its use of the largest forward-looking research of HRCT patients. It gives true data on bronchiectasis prevalence in asthma-uncontrolled individuals. This study concludes that in individuals with severe persistent asthma, the prevalence of bronchiectasis is still significant particularly in older individuals with a prolonged condition. For this reason, bronchiectasis should be assessed in order to effectively treat patients with severe persistent asthma to avoid an aggravation of asthma and hence to limit hospital admissions.

CONCLUSION

The prevalence of undiagnosed bronchiectasis was significantly high among patients of long disease duration suffering from persistent asthma.

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